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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/897,953	07/24/1997	HIDEHIKO KIRA	950107A	5157

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EXAMINER

GRAYBILL, DAVID E

ART UNIT PAPER NUMBER

2827

DATE MAILED: 04/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

08/897,953

Applicant(s)

KIRA ET AL.

Examiner

David E Graybill

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 3,5,6,8-10 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3,5,6,8-10 and 15-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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The request filed on 3-27-02 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 08/897,953 is acceptable and a CPA has been established. An action on the CPA follows.

Documents AF and AG, listed on the information disclosure statement filed 10-15-01, are lined through because they previously have been considered and made of record.

The information disclosure statement filed 10-15-01 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but document AK has not been considered.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 5, 6, 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of applicant's admitted prior art, Maeda (English translation, JP58-180091), and Koga (JP4302444).

At page 1, line 23 to page 2, line 22, applicant teaches as conventional a process comprising the steps of forming leveled projection electrode studs 14 on a semiconductor chip 11 by wire-bonding; forming conductive adhesive 16a on the electrodes by a conductive adhesive 16 that has been skidded on a plate 15a and then transcribed onto the electrodes; applying a thermosetting insulating adhesive 18 to areas of mounting parts where the chip is to be mounted on a substrate 17; aligning the

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chip to the mounting parts at a first stage and performing a first fixing of the chips with a first pressure by a bonding head to which the chip is absorbed; and thereafter, heating the substrate on which the chip is fixed with a thermosetting temperature of the adhesive.

However, applicant does not appear to explicitly teach as conventional a process comprising a plurality of chips, and the steps of heating the adhesive on the substrate with a half-thermosetting temperature so as to harden the adhesive on the substrate to a half-thermosetting state by heating means; moving the substrate to a second stage, while the chips on the substrate are held at their position by the half-thermosetting state of the adhesive; and thereafter, heating at the second stage the substrate on which the chips are fixed.

Nonetheless, Maeda teaches this process at page 2, lines 19-20; page 3, line 22 to page 4, last line; page 6, antepenultimate paragraph to page 8, line 3; and page 9, first full paragraph. Moreover, it would have been obvious to combine the process of Maeda with the process of applicant's admitted prior art because it would enable accurate alignment of plural chips before the final fixing step of the conventional art.

Further, the combination of applicant's admitted prior art and Maeda does not appear to explicitly teach a process

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comprising wherein a second fixing is simultaneously performed for each of the chips with a second pressure, and wherein in the heating step (e) while heating the adhesive on the mounting parts a pressure is applied to the chips.

Nevertheless, in the English abstract and figures, Koga teaches a process comprising wherein a second fixing is simultaneously performed for each of plural chips with a second pressure, and wherein in a heating step while heating an adhesive on mounting parts a pressure is applied to the chips. Furthermore, it would have been obvious to combine the process of Koga with the process of the applied prior art because it would facilitate bonding.

Also, the combination of applied prior art does not appear to explicitly teach a process wherein the second pressure is greater than the first pressure.

Regardless, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose the particular claimed relative pressure because applicant has not disclosed that the limitation is for a particular unobvious purpose, produces an unexpected result, or is otherwise critical, and it appears prima facie that the process would possess utility using another relative pressure.

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Indeed, it has been held that optimization of range limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical.

Claims 3, 5, 6, 8 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of applicant's admitted prior art, Maeda (English translation, JP58-180091), and Koga (JP4302444) as applied to claims 3, 5, 6, 8 and 15 supra, and further in combination with Sakata (JP4-62946).

The combination of applicant's admitted prior art, Maeda and Koga does not appear to explicitly teach a process wherein the second pressure is greater than the first pressure.

Notwithstanding, in the English abstract, partial translation, and figures, Sakata teaches this process. Furthermore, it would have been obvious to combine the process of Sakata with the applied prior art because it would enhance production yield.

To further clarify, Sakata teaches that the first pressure is 20 kg/cm² and the second pressure is about 20 kg/cm², and the range encompassed by the phrase "about 20 kg/cm²" encompasses a pressure greater than 20 kg/cm².

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Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of applicant's admitted prior art, Maeda and Koga, as applied to claims 3, 5, 6, 8 and 15, and further in combination with DiStefano (5548091).

The combination of applicant's admitted prior art, Maeda and Koga does not appear to explicitly teach a process comprising wherein, in the heating step (c), heating the adhesive is performed by a heat plate on which the substrate is placed.

Nonetheless, at column 9, lines 3-63, DiStefano teaches a process comprising wherein in a heating step, heating an adhesive is performed by a heat plate 58 on which a substrate mounting chips is placed. In addition, it would have been obvious to combine the process of DiStefano with the process of the applied prior art because, both processes are directed to the same purpose of heating an adhesive, and it would facilitate adhesive curing.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of applicant's admitted prior art, Maeda, Koga and Sakata, as applied to claims 3, 5, 6, 8 and 15, and further in combination with DiStefano (5548091).

DiStefano is applied for the same reasons it is applied supra.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of applicant's admitted prior art, Maeda and Koga as applied to claims 3, 5, 6, 8 and 15, and further in combination with Fujimoto (5115545).

The combination of applicant's admitted prior art, Maeda and Koga does not appear to explicitly teach a process comprising a heat block having a plurality of pressing/heating heads each of which is provided on the heat block corresponding to the mounting parts of the substrate.

Notwithstanding, as cited, Koga teaches a process comprising a heat block 25 having a plurality of pressing/heating portions each of which is provided on the heat block corresponding to the mounting parts of the substrate. Further, at column 6, line 52 to column 7, line 3, Fujimoto teaches a single bonding head 52 for each chip. Moreover, it would have been obvious to combine the process of Fujimoto and the process of Koga by providing the heat block 25 with a single head for each chip because it would enable a pressing force to act evenly on each chip. Furthermore, it would have been obvious to combine the heat block of the combination of Fujimoto and Koga with the applied prior art because it would facilitate bonding.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of applicant's admitted prior art, Maeda, Koga and Sakata as applied to claims 3, 5, 6, 8 and 15, and further in combination with Fujimoto (5115545).

Fujimoto is applied for the same reasons it is applied supra.

All claims are drawn to the same invention claimed in the parent application prior to the filing of this Continued Prosecution Application under 37 CFR 1.53(d) and could have been finally rejected on the grounds and art of record in the next Office action. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing under 37 CFR 1.53(d). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event will

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the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to the group receptionist whose telephone number is 703-308-1782.

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (703) 308-2947. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

The fax phone number for group 2800 is 703/305-3431.



David E. Graybill
Primary Examiner
Art Unit 2827

D.G.
20-Apr-02